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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

DUDEK, J

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 06/27/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/999,663

Applicant(s)
Colgan et al

Examiner
James Dudek

Group Art Unit
2871



☒ Responsive to communication(s) filed on Apr 5, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-45 is/are pending in the application.

Of the above, claim(s) 14, 32, and 33 is/are withdrawn from consideration.

☒ Claim(s) 21-23, 27, and 29 is/are allowed.

☒ Claim(s) 1, 2, 4-13, 15, 18, 24-26, 28, 30, 31, 34-41, and 43 is/are rejected.

☒ Claim(s) 3, 16, 17, 19, 20, 42, 44, and 45 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Response to Amendment

1. The Affidavit filed on 4/5/00 under 37 CFR 1.131 is sufficient to overcome the Sato et al reference.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: see figures 12-17. Correction is required.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, (the figures show element 24,30 as a electrode/mirror while the claims seem indicate the electrodes and mirrors as being separate elements) separate electrodes and mirrors must be shown or the feature(s) canceled from the claim(s) and a storage capacitor **connected** with the first electrode and positioned under the first electrode (as the element is a storage capacitor it is assumed that the connection is an electrical connection) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

~~Claim Rejections - 35 USC § 112~~

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The "plurality of liquid crystal devices" is confusing since it is unclear what defines the liquid crystal devices. According to the specification the devices incorporate several elements which are confusingly claimed as separate elements different from the liquid crystal devices.

The storage capacitors connected to the first electrodes is confusing because it is unclear if Applicant means electrical connection or a physical connection to the first electrode. Also, the storage capacitor is formed by multiple layers including the first electrode. Thus it is unclear if the Applicant is meant to claim a separate capacitor electrically connected to the first electrode. Furthermore, one of the storage capacitors according to specification is formed by the first electrode, a dielectric layer and the light blocking layer and thus the storage capacitor and first electrode are not separable. The Examiner will examine the case as if it is the storage capacitor is formed with the first electrode.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 4-5, 8-10, 15, 30-31, 34-41 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Lloyd (4,239,346).

Per claim 1, 30-31, 34-41, and 43, Lloyd's figures 9 disclose a spatial light modulator array for modulating light to form an image comprising: a plurality of liquid crystal devices (the volume of liquid crystal that corresponds to the region above pixel electrodes) positioned over respective first electrode/mirrors (74) on a dielectric layer (76) on a semiconductor substrate (52), a plurality of electrical circuits (58) formed in said semiconductor substrate (see figures) coupled to said liquid crystal devices, respectively, for placing a voltage across its electrodes (coupled via the electric field generated by the pixel electrodes), and a reflector/absorber layer (72) positioned and patterned with respect to said mirror for shielding said plurality of electrical from ambient

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light circuits (see figures, the shading layer clearly shields the transistor from the ambient light), said reflector/absorber layer having an edge overlapping an edge of said mirror to form an overlapping region to decrease ambient light from passing into said semiconductor substrate (see figures).

Per claim 31, light blocking layer 72 is Al.

Per claim 39, the light blocking layer is Al. and the reflecting electrode is chromium.

Per claim 4, wherein the mirrors have a supporting layer having a substantially planar upper surface (see figures) and the mirrors includes a metal layer for reflecting light (the chromium pixel electrode and is on the planar surface).

Per claim 5, the supporting layer includes a dielectric material and electrical vias (the hole in the insulator) for electrical connection to the metal layer.

Per claim 8, the respective mirrors form the lower electrode of the plurality of liquid crystal device and is electrically coupled to the output of the electrical circuits (see figures).

Per claim 9, the reflector/absorber is formed from Al.

Per claim 10, see figures; the reflector/absorber layer is electrically conductive (Al) and forms a blanket over the semiconductor substrate with openings.

9. Claims 1, 7, 24, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahn.

Per claims 1, 24, and 26 Kahn discloses a liquid crystal display comprising a substrate; a plurality of circuit elements, 48, being formed on the substrate, 40; a first electrode over the circuit element, 70; a storage capacitor under the electrode, 66-70; an optical reflector formed on the electrode, 75; first and second orientation films, 80-81; a second transparent electrode, 33; liquid crystal material, 90; and optical blocking means, 66, see column 5 lines 35-40.

Per claim 7, see column 5.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2, 6, 11-13, 18, 25, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lloyd.

Per claims 2, 12 and 13, Lloyd disclose the claimed invention, as described above, except for the overlap of 5.4 microns, the capacitance of 0.03 pf and the pitch of 17 microns. However, it was well known to use a pixel pitch of 17 microns in order to improve the resolution. Also, when a pitch of 17 microns is incorporated into the display of Lloyd et al the end result would produce of capacitance of 0.03 pf and an overlap of 5.4 microns. The figures show the reflector/absorber overlapping almost the entire region under the mirror and thus would overlap by at least 5.4 microns. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a pixel pitch (which would necessary would produce a capacitance of 0.03 pf and an overlap of 5.4 microns) in the display of Sato et al in order to improve the resolution.

Per claim 6, 18, 25, 28, it was well known to combine light-blocking wall-spacers with liquid crystal displays to maintain cell gap thickness and provide a black matrix. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

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combine well known light-blocking wall-spacers with the display of Lloyd since it was well known for maintaining the cell gap and improving the contrast of the display.

Per claim 11, it would have been obvious to substitute CMOS transistor for the FET transistors of Lloyd in order to decrease power consumption.

Allowable Subject Matter

12. Claims 21-23, 27, 29 are allowed.

13. Claims 3, 16-17, 19-20, 42, and 44-45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

14. Applicant's arguments with respect to the claim(s) have been considered but are moot in view of the new ground(s) of rejection.

Examiner acknowledges the recognition to the double patenting rejection and awaits the terminal disclaimer.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Dudek at (703) 308-4093



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